

REMARKS

Claims 1-26 are currently pending in the application of which claims 1, 8, 15, 19 and 24 are independent.

Requested Information on Earlier Versions of Pro Engineer

Attached hereto as Attachment A is a disk containing the electronic versions of the user manuals of:

- 1) Pro/Engineer Release 18.0(1997)
- 2) Pro/Engineer Release 19.0 (1997)
- 3) Pro/Engineer Release 20.0 (June 1998)

*dates refer to copyright markings in manuals

Applicants are providing the materials on a disk as the materials total hundreds of MB of data which would be thousands of pages if printed out, and the materials may be more easily searched in their electronic format. Applicants believe that submitted data is the information that the Examiner has requested. Applicants previously submitted this material in disk format with their response dated July 8, 2004. If for some reason this disk also becomes separated during the processing of the Amendment, Applicants request the Examiner call the undersigned and provide an address where Applicants' attorney can send the disk to the Examiner directly.

Claim Rejections Pursuant to First Paragraph of 35 U.S.C. §112

The Examiner rejected claims 1-14 and 19-23 under 35 U.S.C. §112 first paragraph as containing subject matter that was not described in the specification in such a way as to convey to one reasonably skilled in the relevant art that the inventor had possession of the invention at the time the application was filed. Specifically, the examiner failed to find support for the added limitation "programmatically". The Examiner has suggested that the broadest possible interpretation of "programmatically" would include program execution with or without user input. Applicants have amended the independent claims at issue to clarify that the programmatic execution is occurring without user input. The claimed programmatic execution without user input is supported in the specification at the multiple locations cited in the previous response submitted on July 8, 2004.

Provisional Double Patenting Rejection

The Examiner has indicated that claims 1, 8 and 24 are provisionally rejected for obviousness-type double patenting over claims 1, 9, 14, 19, 23, 27 and 30-31 of co-pending United States Application Number 09/316, 549 in view of Cottrell et al., "CHDStd- A Model for Deep Submicron Design Tools", Design Automation Conference 1998, Proceeding of the ASP-DAC 1998, Asia and South Pacific, pages 249-255 (hereafter "Cottrell"). The Examiner stated that claims 1, 9, 14, 19, 23, 27 and 30-31 of co-pending Application Number 09/316, 549 fail to expressly disclose that the analysis is "an external application program (EAP)" as recited in the present application. The current state of the claims in co-pending Application Number 09/316, 549 cited by the Examiner are listed below:

1. In a computer-aided design (CAD) system, a method, comprising the computer-implemented steps of:

*providing a feature-based model of an object;
providing an analysis for acting on at least a portion of the model;
creating at least one feature in the model that contains the analysis, said feature containing the analysis updating automatically without user intervention following a re-computation of the analysis initiated by a change in the model of the object; and
adding the feature to the model of the object.*

9. In a computer-aided design (CAD) system having a feature-based model of an object, a method comprising the computer-implemented steps of:

*performing an analysis on the model to yield results;
creating an analysis feature in said model based on the analysis and the results;
modifying the model so that when the analysis is performed again on the model new results are yielded; and
automatically updating the analysis feature based on the new results.*

14. In a computer system, a method comprising the computer-implemented steps of:

*providing a parametric feature-based model of an object;
incorporating an analysis that is applied to the parametric feature-based model to produce results into a feature of the parametric feature-based model, said feature containing the analysis updating automatically without user intervention following a re-computation of the analysis initiated by a change in the model of the object;
applying the analysis to the parametric feature-based model to produce results;
based on the analysis and the results, determining whether the parametric feature-based model satisfies a requirement; and
based on this determination, performing an action.*

19. In a computer-aided design (CAD) system that has a parametric feature-based model of an object, a method comprising the steps of:

- providing an analysis that is applied to the parametric feature-based model wherein the analysis produces results based on at least one set of values for a selected set of parameters of the model;*
- applying the analysis to the model multiple times to produce results, each time with different sets of values for the selected set of parameters; and*
- choosing at least one of the set of values for the selected sets of parameters based on the results from applying the analysis to the model multiple times, said analysis incorporated into a feature of the parametric feature-based model, said feature containing the analysis updating automatically without user intervention following a re-computation of the analysis initiated by a change in the model of the object.*

23. In a computer-aided design (CAD) system having a feature-based model of an object, a computer-readable medium holding computer-executable instructions for performing, a method, comprising the computer-implemented steps of:

- providing a feature-based model of an object;*
- performing an analysis for acting on at least a portion of the model;*
- creating at least one selected feature based on the analysis, said feature containing the analysis updating automatically without user intervention following a re-computation of the analysis initiated by a change in the model of the object; ; and*
- adding the selected feature to the model of the object.*

27. In a computer-aided design (CAD) system having a feature-based model of an object, a computer-readable medium holding computer executable instructions for performing a method, comprising the computer-implemented steps of:

- performing an analysis on the model to yield results;*
- creating an analysis feature in the model based on the analysis and the results;*
- modifying the model so that when the analysis is performed again on the model new results are yielded; and*
- automatically updating the analysis feature based on the new results.*

30. In a computer system having a feature-based model of an object, a computer-readable medium holding computer-executable instructions for performing a method, comprising the computer-implemented steps of:

- performing an analysis on at least a portion of the model to yield results;*
- representing the results as one or more selected features in the model; and*
- creating at least one new feature that references at least one of the selected features.*

31. In a computer system having a feature-based model of an object having parameters, a computer-readable medium holding computer-executable instructions for performing a method, comprising the computer-implemented steps of:

- performing an analysis on at least a portion of the model wherein the analysis produces results based on a set of values for a selected set of parameters of the model, said analysis incorporated as a feature in said model, the feature containing the analysis*

*updating automatically without user intervention following a re-computation of the analysis initiated by a change in the model of the object;
applying the analysis to the model multiple times to produce results, each time with a different set of values for the selected parameters;
choosing the values for the selected set of parameters for which the results from applying the analysis are optimal; and
creating at least one new feature in the model that references the optimal results of the analysis.*

The claims all indicate that the analysis is included in a feature of the model with the exception of claim 30. Claim 30 indicates that the results of the analysis are represented as one or more selected features in the model; and that at least one new feature is created that references at least one of the selected features. These limitations are lacking in the claims of the present application. Applicants also point out that, for reasons discussed in depth in the discussion of the §103 rejections, Cottrell does not discuss an EAP. Since Cottrell does not discuss an EAP, its combination with the claims cited by the Examiner that do not discuss an EAP cannot provide the basis for a double patenting obviousness type rejection based upon a §103 analysis. The combination of references does not teach or suggest all of the elements of Applicants claims. Accordingly, Applicants respectfully request the withdrawal of the provisional double patenting rejection.

Claim Rejections Pursuant to 35 U.S.C. §103(a)

Claims 1-26 were rejected by the Examiner under 35 U.S.C. §103(a) as being unpatentable for obviousness over Fane, "Your Table is Waiting..." CADalyst, January 1999, pages 70-75 (hereafter "Fane"), in view of Cottrell. For the reasons set forth below, the rejections are respectfully traversed.

Summary of Claimed Invention

The claimed invention describes a computer system running a CAD package which is interfaced with an External Application Program (EAP). The CAD package includes a model of an object. The model of the object includes output data from the EAP which is integrated into the model. The model is then modified and a determination is programmatically reached

without user input that the modification requires recalculation of the EAP output data. New input data is sent to the EAP without user input in response to the determination that the modification of the model requires recalculation of the EAP output data. New output data is then received back from the EAP and reintegrated into the model. The claimed invention discusses a two way communication process by which the CAD package and model automatically determines in response to model changes the need to send new input data to the EAP, run it, and obtain new output data from the EAP.

Summary of Fane

Fane describes a computer system running a CAD package that is used in conjunction with a Microsoft Excel spreadsheet. The article describes a methodology to tie a set of parameters to the Excel spreadsheet. The CAD model may be used to create a spreadsheet holding values of model components. Existing spreadsheets may also be associated with the model. The Excel spreadsheet then acts as a database from which the CAD model is fed parameter values. Once the spreadsheet has been set up, data is communicated in one direction only, from the spreadsheet to the CAD model. Put another way, data is retrieved from the spreadsheet and the model components are changed to reflect the spreadsheet contained values. The CAD model does not feed values to the Excel spreadsheet after the association between the two files has been established. Any additional updating of the model is done by a user manually selecting an update control from the CAD program interface.

Summary of Cottrell

Cottrell et al discuss the Chip Hierarchical Design System (CHDS) which is based on the Integrated Data Model (IDM) modular technology developed by IBM. CHDS is used in semiconductor chip design. The Cottrell paper discusses the use of IDM and CHDS as the basis for an industry-open specification referred to as CHDS Technical Data Specification (CHDStd). CHDStd is data-centric in that complete design information and inter-relationships are centrally managed in memory, maintained persistently, and surfaced to applications via standardized access methods. The IDM technology supports a callback feature that allows a modularized application to register methods to be invoked on specific object events.

Argument

The combination of Fane in view of Cottrell fails to teach or suggest all of the claim elements of Applicants independent claims.

Applicants' specification describes an External Application Program (EAP) as being located outside the address space of the CAD system. The EAP may thus be located in a separate address space on the same computer as the CAD system or on a separate computer system. The system described in Cottrell clearly indicates it is not an EAP. The model and the application are located in the same address space. The Examiner's attention is respectfully directed to the final paragraph 6, left column of page 252 of Cottrell:

Within a single tool, program code can be easily modularized to take advantage of this event-driven processing. However, to open up such incremental cooperation between two separate programs, allowing plug-and-play of either, it would be necessary to standardize control interfaces among the component modules. This level of standardization has not been performed and is beyond the scope of the CHDStd [emphasis added].

Furthermore, a close reading of the callback paragraph cited by the Examiner reveals the example in the fifth paragraph, left column, on page 252 of Cottrell, is for an application that has been modularized to callback a routine in the same application upon the occurrence of an object event during the execution of a different part of the same application. The application parts have the same address space. The Examiner's attention is additionally directed to the first paragraph of the right column on page 252 in Cottrell wherein it indicates that the integrated modules being discussed share a single process space.

Applicants' independent claims 1, 8, 15, 19, 24 all include variations of the elements of determining programmatically without user input that modifications to the model require recalculation of the output data from the EAP, that this determination generates new input data being sent without user input to the EAP, and that the corresponding output data is received back from the EAP. All of the updating of the model in Fane occurs in response to manual commands

from a user via the CAD program interface (e.g. clicking on an update button). Fane does not teach or suggest the integration of the output data into the model such that future changes to the model require additional calculations to be performed by the EAP. Fane also does not teach or suggest a programmatic determination that a recalculation of EAP data is necessary.

Cottrell also does not teach or suggest these missing elements. Cottrell does not teach or suggest an EAP, an element central to all of Applicants claims. Cottrell also appears to teach away from the combination suggested by the Examiner in that it indicates that an integration between address spaces has not been performed because of difficulty (see paragraph 6, left column, page 252 of Cottrell). Cottrell is discussing the modularization of a single application and the calling of a routine in the same application in response to object events occurring during execution. Put another way, both the model and the application (CAD package) in Cottrell are operating in the same address space. The other elements of Applicants claims, the programmatic sending of new input data to an external application program and the resulting receipt and integration of the newly generated output data are similarly not taught or suggested by Cottrell. Applicants respectfully suggest that the system being discussed in Cottrell is a stand-alone application capable of modularization that is clearly not analogous to the claimed invention and does not teach the elements of Applicants independent claims missing from Fane.

Accordingly, since the combination of Fane in view of Cottrell fails to teach or suggest all of the elements of Applicants claims, Applicants request the withdrawal of the rejections directed to claims 1-26 and the allowance of the claims.

CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. PAS-094RCE from which the undersigned is authorized to draw.

Dated: February 10, 2005

Respectfully submitted,

By 

John S. Curran

Registration No.: 50,445

LAHIVE & COCKFIELD, LLP

28 State Street

Boston, Massachusetts 02109

(617) 227-7400

(617) 742-4214 (Fax)

Attorney/Agent For Applicant